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THE GARDEN CALENDAR

A radio discussion by W. R. Beattie, Bureau of Plant Industry, delivered in the Department of Agriculture period of the National Farm and Home Hour, broadcast by a network of 48 associate radio stations, Thursday, March 1, 1934.

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Today in our Garden Calendar period, I want to talk to you about some of the points that fruit growers and you folks who have home orchards should be keeping in mind as the spring season advances.

We have been pretty well frozen in here around Washington lately, and we have plenty of snow but it will not be long now until our trees will be budding and blooming. In many cases the weather has prevented the usual winter pruning and dormant spraying, and some of us may find it difficult to get this work done on time. There are certain growth requirements of our trees that must be met if we are to grow good fruit either for home use or for the market, so today I thought I would pass on to you a few suggestions that Dr. John R. Magness, who is in charge of our Fruit Investigations, gave me regarding the importance of having plenty of good foliage on your fruit trees and of securing a good growth.

Magness says he thinks that fruit growers should pay more attention to the leaves on their trees and to know more about the function of the leaves. You often hear the leaves spoken of as the lungs of the plant, but they are really a great deal more than the lungs, because it is in the leaves that all of the materials that go to build up the fruit are formed. It is in the leaves that the carbon dioxide - which is present in very small traces in the air - comes in contact with the water that rises from the soil through the roots and trunks of the trees and combines chemically to form sugar. It is from this sugar, and certain other compounds that are formed in the leaves that practically all of the materials, except water, that make the fruit are formed. It is in the leaves too that practically all of the materials that build up the wood and the bark of the tree are formed. From this you can readily see that the leaves of a fruit tree are very important, and the growth of the tree and development of the fruit, are very largely dependent upon the amount of leaf area that the tree carries.

On the lower surface of every leaf we find a tremendous number of small pores, the botanists call them stomata. There are literally tens of thousands of these little pores on the under surface of an apple leaf. These little pores or openings have the power of opening and closing. Normally, they're closed during the night and open in daytime, and they will stay open all day if they are getting plenty of water from the roots of the tree. But let the water supply run low, or if the weather becomes very hot, even though there is plenty of moisture in the soil, the stomata will close about noon, or at some time during the day. If there is plenty of moisture in the soil and the day is cool and overcast so that evaporation from the leaves is not so rapid the stomata will stay open practically all day. When they stay open the leaf functions 100 per cent and forms the materials that build your fruit, but when they are closed and there is very little leaf activity going on the growth of your fruit is at a standstill.

Now the main point that I want to get over to you today is the fact that
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there is a direct relationship between the number of good healthy, disease-free leaves that you have on your fruit tress, and the size, color and quality of the fruit. Magness and his associates carried on some very interesting experiments to determine the relationship between leaf area and fruit production.

To begin with an apple or a peach as it is growing on the tree consists of approximately 85 per cent water. The rest of it is mainly sugar and fibrous materials. The experiments with apples showed that with 10 leaves per fruit, the fruit ran small, about 200 to the bushel, in fact, too small for good commercial fruit. With 20 leaves per fruit, the size of the fruit was nearly doubled, and with 30 leaves per fruit the fruit averaged about 113 to the bushel. Nor was that all because where there were only 10 leaves per fruit there was very little fruit-bud formation on those branches for the next year. In other words all of the materials that were formed in the ten leaves per fruit apparently went into the fruit, and the buds were small and in no case did they form fruit buds for the next season. With 30 leaves per apple, Magness and his associates got plenty of fruit-bud formation for the next year with most of the important commercial apple varieties. These experiments showed that if a fruit tree carries too much fruit in relation to its leaf area not only will the crop of that season be inferior but the tree will fail to put on fruit buds for the next year.

Now, what does this really mean to you folks who are growing fruit? Simply this. You need to fertilize your trees so that they will grow a good crop of leaves. You may need to thin the fruit, so that in case of apples for example, there will be not more than 1 fruit to each 30 leaves, and there must be enough moisture in the soil to keep the leaves active and working during every hour of favorable daylight. Undoubtedly the leaf area of the whole tree affects the growth of the fruit, but it is the leaf area of the branches on which the fruit is borne that is most important. Of course, you understand that leaves that are affected by the various leaf diseases cannot function 100 per cent, therefore, the foliage should be kept in a healthy condition by spraying or dusting.

According to the results that Magness obtained from his experiments you must have plenty of healthy foliage on your trees if you are to grow good fruit, and the time to start the leaf growth is in the early spring when the trees may need a little fertilizer to start them off right. Commercial apple growers often follow the practice of giving their bearing trees 3 to 5 pounds each of nitrate of soda, sulphate of ammonia, or some other form of readily available nitrogen. This stimulating fertilizer is applied 2 or 3 weeks before the blossoms open and is scattered broadcast under the tree and extending 3 or 4 feet beyond the tips of the branches for that is where most of the feeder roots are found. Nitrates can be used to advantage on other fruits except in the case of pears for too much fertilizer is apt to cause pear trees to blight.

I fully realize the difficulties that confront the farmer or owner of a small place who attempts to grow fruit for home use. I have about thirty trees of apples, cherries, plums and pears on my little place and I know what it means to spray in winter with lime sulphur solution or oil sprays to control scale insects also to follow through with the complete spray or dust schedule that is necessary to the production of good fruit. All of this is really not difficult if you're prepared with a spray outfit and the necessary chemicals but like everything else nowadays the production of worthwhile fruit requires work and attention. I believe that there are cases where it will pay you folks who live on farms to purchase your supply of standard tree fruits but it is a great satisfaction to have your own. It will undoubtedly pay most of you to grow strawberries and other small fruits for home use.

In case any of you should plant fruit trees or small fruits this spring be sure that you get the varieties that are adapted to your section. Your County Agent and your State College people can help you in this matter.